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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,341

08/24/2006

Scott Gaynor

Q92644

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EXAMINER

BROOKS, CLINTON A

ART UNIT

PAPER NUMBER

1621

MAIL DATE

DELIVERY MODE

09/11/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,341	<b>Applicant(s)</b> GAYNOR ET AL.	
	<b>Examiner</b> CLINTON BROOKS	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/15/2006, 8/4/2006</u> .                                     | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Priority*

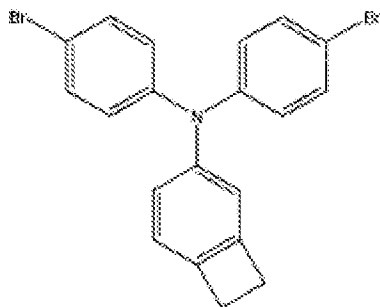
Application no. 10/579,341, filed August 24, 2006 is a national stage application of PCT/US04/35221, filed October 25, 2004, which claims benefit to provisional application number 60/520,596, filed November 17, 2003. After searching application no. 60/520,596, Examiner determined that the currently pending claims have support in the provisional application. Therefore, the currently pending claims receive the November 17, 2003.

### *Status of Claims*

Claims 1-16 are currently pending.

### *Election/Restrictions*

Applicants' election in the response dated September 2, 2009 without traverse of Groups I, claims 1-9 is acknowledged. Further, Applicants' specie election (see below) in the September 2, 2009 response is acknowledged. Because Applicants did not distinctly and specifically point out the supposed errors in the restriction requirement with respect to the species election, the election has been treated as an election without traverse (MPEP § 818.03(a)).



Claim 10-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim.

Applicants state that claims 1-9 read on the elected specie. For claims 6-8 to read on the elected specie the term "phenylene" must read on the specie. Examiner examined claims 1-9 with the interpretation that "phenylene" reads on the specie. MPEP § 803.02 provides guidelines for election of species in Markush-type claims. These guidelines were followed for the search and examination detailed herein. The elected species was not found to be allowable (Sections 8-15). In addition, the search was expanded to additional species (see rejection below). Therefore, the Markush-type claims were rejected and the subject matter drawn to nonelected species held withdrawn from further consideration.

### ***Information Disclosure Statement***

The Examiner has considered all references from the information disclosure statements (IDS) received May 15, 2006 and August 4, 2006 that have not been marked with a strikethrough.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225

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USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

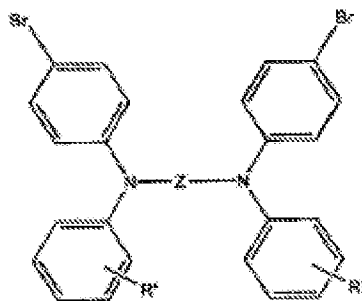
A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**Claim 1-2, 6, 9** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4 of U.S. Patent Application No. 10/579215 (“the ‘215 application”). Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of the ‘215 application teaches the limitations of the instant claims above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The claims of the ‘215 application teaches a halogenated bisdiarylaminopolycyclic aromatic monomer:



wherein Z is a polycyclic arylene group, and each R' is independently a C<sub>1</sub>-C<sub>20</sub> alkyl group, a carbo-C<sub>1</sub>-C<sub>20</sub>-alkoxy group, a C<sub>7</sub>-C<sub>20</sub>-alkoxy group, or a C<sub>6</sub>-C<sub>40</sub> aryl group.

Thus, the '215 application teaches a compound as recited in formula I of claim 1 that the Ar is independently in each occurrence a group comprising one or more divalent aromatic groups, X is an inert substituent or a crosslinkable group (the C<sub>1</sub>-C<sub>20</sub> alkyl groups can polymerize through free radicals at the benzylic positions, or R<sub>1</sub> = methyl in claim 4), Z is a leaving group bromide, n = 1 and n' = 1. Further, the precursor is capable of in situ formation of a double bond, heterocycle or polymerizable group through free radical polymerization; and Ar = phenylene. Thus, the '215 application teaches all the limitations of the instantly rejected claims.

### ***Claim Rejections – 35 USC § 102***

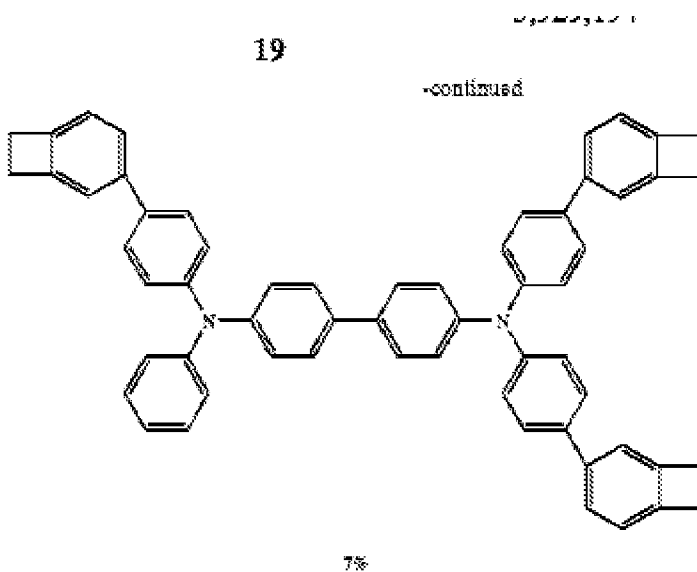
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-4, 9** are rejected under 35 USC 102(b) as being unpatentable over United States Patent no. 5,929,194 ("the '194 patent", made of record in the Restriction Requirement dated March 3, 2009).

The '194 patent teaches at least the following additional species. The compound at column 19 lines 1 to 20 (see below):

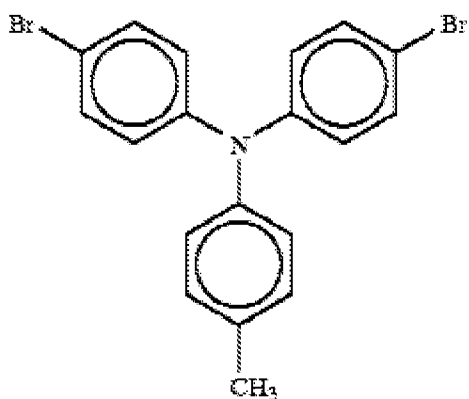


In this case, the '194 patent teaches an aryl amine of formula I wherein Aryl is independently in each occurrence one or more divalent aromatic groups, X is a cross-linkable group, and Z is a leaving group (the cyclobutene ring and thus part of the group leaves); n is 1 and n' is 1. On page 4 of the specification leaving group is defined as: "Leaving group" means a substituent that is readily displaced or eliminated from the molecule under coupling conditions. Examples of suitable leaving groups include halo, cyano, triflate, azide..." In this case under coupling conditions, the carbon-carbon bond of the cyclobutene system breaks and the cyclobutene ring a carbon atom is eliminated from the ring to give a diene, thus part of the group

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separates and thus leaves. Further, this species above teaches a precursor capable of in situ formation of a double bond, heterocycle, or addition polymer; X is a 3,4-benzocyclobutanyl group; Ar is a phenylene, X is a 3,4-benzocyclob

The '194 patent teaches the following species. The compound at column 22 lines 1 to 15 (example 11):



In this case a compound of formula I is taught that Ar is one divalent aromatic group, X is an inert substituent or a crosslinkable group. In this case, X is a crosslinkable group (free radical reactions of benzylic positions), and X = leaving groups (Br). Further, in the dibromo compound above, X is capable of in situ formation of a double bond, heterocyclic, or addition polymer group. Further, in the dibromo compound, Z equals halogen. Further, in the dibromo compound, Ar equals phenylene.

### ***Claim Rejections – 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:



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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

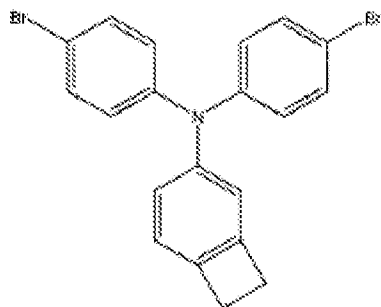
U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

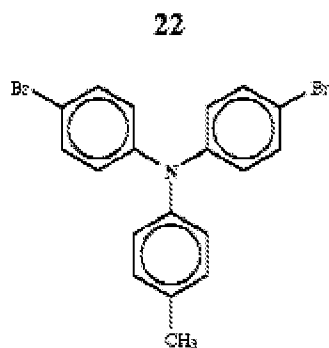
This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claim 1-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Unites States Patent No. 5,929,194 (“the ‘194 patent” made of record in the Restriction Requirement dated March 3, 2009).

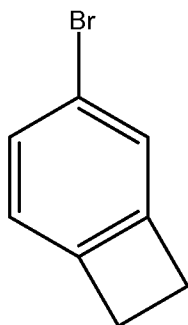
For clarity the species election is provided again below:



The '194 patent teaches the following species:



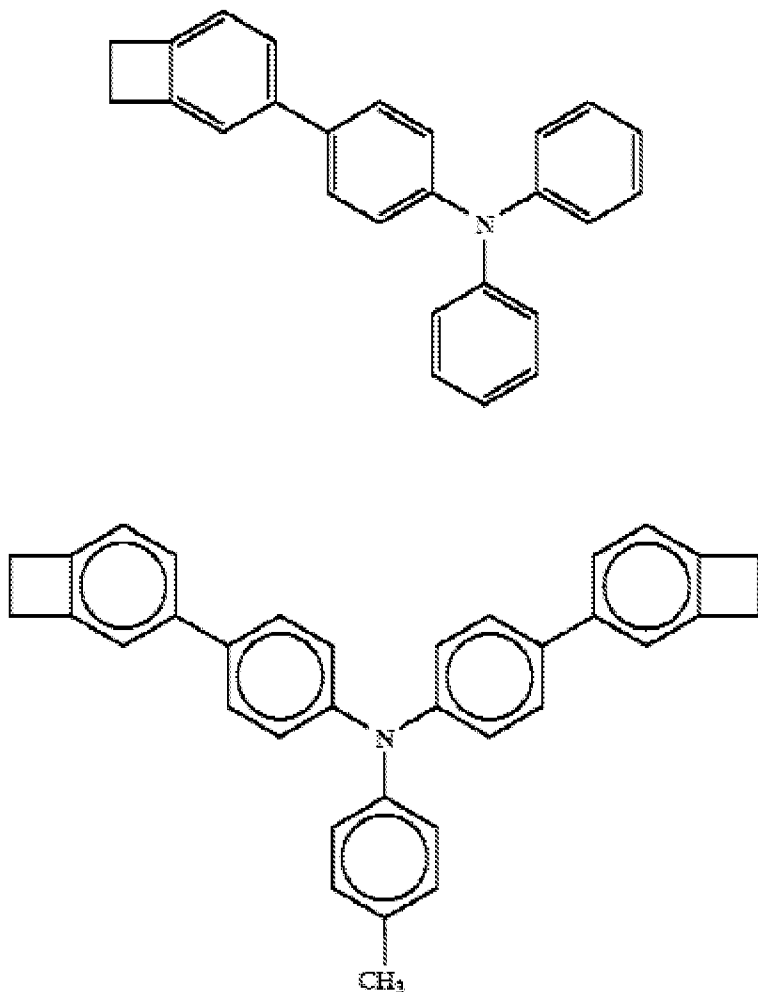
Still further, the '194 patent teaches that “[i]n one preferred embodiment, the haloaromatic compound is a halogen-substituted benzocyclobutene moiety according to Formula (XII)” (column 9, lines 13 to 15).



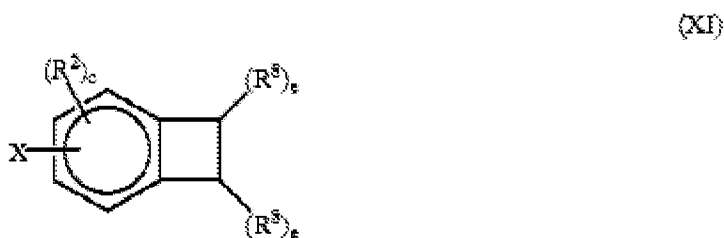
bromobenzocyclobutene (recited in the instant claims as a benzocyclobutanyl group)

Further, the '194 patent teaches that "[t]he tertiary and di or polyamines useful as starting materials in this invention preferably contain two halogen moieties. Such compounds are generally prepared by reacting tertiary di- or polyarylamines which do not contain a halogen with molecular halogen in a solvent such as a halohydrocarbon or a carboxylic acid. Alternatively, the tertiary di- or polyarylamines containing about two halogen moieties may be prepared by contacting there tertiary di- or polyarylamines with bromosuccinimide. This process is described in R. H. Mitchell, Y. H. Lai, R.V. Williams J. Org. Chem., Vol. 44, p. 4733 (1979), relevant parts incorporated by references" (column 8, lines 20 to 32). Thus, the '194 patent teaches that two halogens are preferred as disclosed in the specie and the compound **22** of the '194 patent.

Further, the '194 patent teaches examples that contain a cyclobutene group such as example 5, and 21:



Further, the '194 patent teaches an advantage of the cyclobutene group on the aromatic amine “[p]referably, the haloaromatic compound having a reactive group capable of crosslinking or chain extension or a trialkylsiloxo moiety, corresponds to the formula E-Ar<sub>2</sub>-X wherein Ar<sub>2</sub>, E, and X are as previously defined. Preferably, the haloaromatic compound corresponds to formulas (XI) or (XII)” (column 8, lines 53 to 59).



Thus, the '194 patent teaches that the cyclobutene group provides an advantage because it is capable of crosslinking or chain extension. Further, the '194 patent teaches that "[w]hat is needed are relatively high molecular weight charge transport compounds which are capable of forming films and can be crosslinked by conventional methods, such as by radiation or heat curing, to form solvent resistant films" (column 3, lines 1 to 5).

In view of the reference as a whole, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the cyclobutene containing aromatic ring for the toluene ring of compound **22** as taught by the '194 patent. One skilled in the art would have been motivated to maintain the two bromo containing rings because the '194 patent teaches that 2 halogen moieties are preferred. Further, the '194 patent teaches that preferred embodiments contain an arylcyclobutene moiety. Further, one skilled in the art would be motivated to substitute the arylcyclobutene moiety with the expectation of success because it provides an advantage over the toluene group of compound **22**. One skilled in the art at the time the invention was made would recognize that the arylcyclobutene containing molecule could

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crosslink and provide chain extension which leads to high molecular weight charge transport compounds capable of being crosslinked by conventional methods, such as by radiation or heat curing, to form solvent resistant films.

### *Conclusion*

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLINTON BROOKS whose telephone number is (571)270-7682. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DANIEL SULLIVAN can be reached on (571)272-0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Cab

/Daniel M Sullivan/

Supervisory Patent Examiner, Art Unit 1621